CLAIMS:

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. In a network environment including one or more network processing (NP) devices implemented for communicating packets, each NP device supporting a forwarding table comprising entries to enable forwarding of received data packets from a source device to a destination device according to a routing protocol via a network connection, said network device routing receiving updated forwarding table entries from one or more network control devices executing routing protocol applications, a method for updating forwarding table entries comprising:

a) generating for each forwarding table entry update, a data structure indicating identification of the routing protocol application and a version of a particular routing protocol application instance generating said entry update, said data structure received by said forwarding table and incorporated within a respective forwarding table entry;

b) identifying for deletion forwarding table entries having data structures matching a designated selection criteria; and,

c) deleting said designated forwarding table entries, whereby old forwarding table entries in said forwarding table are updated efficiently without disrupting packet forwarding process.

2. The method for updating forwarding table entries in accordance with Claim 1, wherein said selection criteria includes a value representing a version of a particular routing

protocol application instance, said identifying step b) including the step of: identifying said forwarding table entries having data structure indicating said value.

3. The method for updating forwarding table entries in accordance with Claim 1, wherein said selection criteria includes an identification of the routing protocol application, said identifying step b) including the step of identifying said forwarding table entries having data structure indicating said routing protocol application.

4. The method for updating forwarding table entries in accordance with Claim 1, wherein said selection criteria includes a range of values indicating versions of particular routing protocol application instances, said identifying step b) including the step of: identifying said forwarding table entries having data structure indicating a version falling within said range.

5. The method for updating forwarding table entries in accordance with Claim 1, wherein said generating step a) is performed by one or more network control devices.

6. The method for updating forwarding table entries in accordance with Claim 1, wherein said identifying step b) includes the step of generating said selection criteria.

7. The method for updating forwarding table entries in accordance with Claim 1, wherein said step of generating said selection criteria is performed by said one or more network control devices.

8. The method for updating forwarding table entries in accordance with Claim 1, wherein said forwarding table is a binary tree structure having leaves comprising said table entries, said identifying step b) including the step of implementing a scanning technique for ascertaining the designations at each of said leaves.

9. A system for ensuring packet routing in a networking environment including one or more network processing (NP) devices implemented for communicating packets, each NP device supporting a forwarding table comprising entries to enable forwarding of received data packets from a source device to a destination device according to a routing protocol via a network connection, said network device routing receiving updated forwarding table entries from one or more network control devices executing routing protocol applications, said system comprising:

control mechanism for generating a data structure indicating identification of the routing protocol application and a version of a particular routing protocol application instance when a forwarding table is to be updated;

communications interface for enabling forwarding of said data structure to said NP device with each corresponding updated table entry;

mechanism for incorporating received data structure into said forwarding table entry when updating said forwarding table entry; and,

synchronization mechanism for identifying forwarding table entries having data structures matching a designated selection criteria and deleting those forwarding table entries having data structures matching said designated selection criteria,

whereby old forwarding table entries in said forwarding table are updated efficiently without disrupting packet forwarding process.

10. The system as claimed in Claim 9, wherein said selection criteria includes a value representing a version of a particular routing protocol application instance, said identifying step b) including the step of: identifying said forwarding table entries having data structure indicating said version.

11. The system as claimed in Claim 9, wherein said selection criteria includes an identification of the routing protocol application, said synchronization mechanism identifying said forwarding table entries having data structure indicating said routing protocol application.

12. The system as claimed in Claim 9, wherein said selection criteria includes a range of values indicating versions of particular routing protocol application instances, said synchronization mechanism identifying said forwarding table entries having data structure indicating a version falling within said range.

13. The system as claimed in Claim 9, wherein said control mechanism further generates said selection criteria.

14. The system as claimed in Claim 9, wherein said forwarding table is a binary tree structure having leaves comprising said table entries, said synchronization mechanism performing scanning of said leaves for ascertaining the corresponding data structures.